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ABSTRACT

The influence of child and family sociodemographic variables on service utilization was investigated with infants with disabilities and their families from three states. Of the 157 infants and toddlers studied, 149 had some form of scheduled service for the 4 specific weeks examined. Of the scheduled service encounters, about 72 percent were actually provided; and all but 5 percent of services not provided were due to families who were unable or did not elect to use the service offered. The median amount of scheduled service per week approximated 1.8 hours, and 1.3 hours of service were actually provided. Families more likely to receive a higher volume of service included those having toddlers, insurance, and mothers with higher annual incomes and higher levels of education. Infants are primarily served in their homes and center-based programs, while toddlers receive the majority of services in centers or in other community-based settings. Mothers with higher levels of educational attainment and annual income receive a higher proportion of therapeutic services (i.e., motor and speech/language therapy). It is noted that service use patterns are influenced by family systems dimensions and other complex variables. (Contains 15 references.) (SW)

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Early Childhood Research Institute on Service Utilization

Socio-Demographic Influences on Services Used by Infants with Disabilities and Their Families

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EC304292

An Institute for the Study of Education, Health Care, & Social Service Utilization of Infants, Preschool Children, and Their Families

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Executive Summary

Socio-Demographic Influences on Services Used by Infants with Disabilities and Their Families

The purpose of this paper is to present preliminary findings with regard to the influence of child and family socio-demographic variables on service utilization patterns. When service data are examined for one week per month over a four month duration, significant findings are as follows.

1. Of the total number of encounters scheduled for infants, toddlers, and their families, 72% were actually provided. For those that did not occur, the majority (i.e., nearly one-fourth) were due to families who were unable or did not elect to use the service offered.

2. With respect to intensity of services received per week, while the median amount of scheduled service approximates 1.8 hours, data indicate that 1.3 hours of service were actually provided. Furthermore, results indicate that approximately one-third of the sample received all of its scheduled services, and nearly one-half of the group received only one hour or less of its scheduled service. In short, for those families who elect to use services, data indicate that the fidelity between services scheduled and provided is quite high.

3. With regard to service intensity (i.e., hours per week), despite statistically insignificant findings, data reveal that child age, family income, maternal education, and maternal insurance status appear to account for important differences in service use. In brief, children/families more likely to receive a higher volume of service include toddlers, and families in which mothers are insured, more highly educated, and report higher annual incomes.

   Overall, while static, socio-demographic factors appear to exert influence on service use patterns, such factors do not disclose the underlying mechanisms and decision making processes that different families employ to access services, nor do these factors provide meaningful insights into the variability that exists within groups (e.g., uninsured families and those residing in poverty). Considerable data are being collected in this study that should assist in illuminating these differences, and these analyses will constitute the focus of subsequent publications by the Institute.

4. Findings reveal that child and maternal characteristics also appear to exert influence over service typology (i.e., location, type, and provider of service). For children, infants are primarily served in their homes and center based programs, while toddlers receive the majority of their services in centers or in other community based settings. With regard to need/complexity, more complex children and families are likely to be served in their homes or in centers. For families, mothers who report higher levels of educational attainment and annual income are more likely to have children who are served in integrated, community based settings, and also received a higher proportion of therapeutic services (i.e., motor and speech/language therapy).

Overall, preliminary findings presented in this paper verify that early intervention is not a homogenous experience for children and families served, both within and across programs. Furthermore, while data suggest that the attributes of those who consume the service, namely children and parents, influence service intensity and typology, important questions remain to be answered.

First, while it is acknowledged that service use patterns are highly influenced by the characteristics of children and families served, it is also critical to recognize that service availability, service access, and ongoing utilization are complex processes that are affected by a myriad of factors (e.g., funding, policy, environmental context, interagency affiliations). These factors comprise the systems based conceptual framework that undergirds this study, and as such, subsequent analyses will examine the influence of these factors and systems on service use as well.

Second, preliminary findings in this paper underscore the enormous importance of child and family systems as explanatory factors in examining service use patterns. Beyond the demographic variables presented herein, however, a broad array of important dimensions also differentiate families such as values and beliefs related to family centered care principles, psychological well

being, the nature and extent of available social supports, and parents perceived and expressed satisfaction with services received. These dimensions are significant in that they illuminate important differences among families within common groups (e.g., uninsured), and furthermore, allow for a clearer understanding of those subtle and underlying factors that account for the observed variability in service use patterns. These dimensions of family systems will also constitute the focus of subsequent analyses and publications by the Institute.

Finally, the vast knowledge base in early intervention research is a persistent reminder that the pursuit of "main effects" from single factors or variables is relatively fruitless. As such, the most promising lines of inquiry are those which accommodate both quantitative and qualitative data, and which employ multivariate analytic strategies that can integrate multiple forms and sources of information. The Early Childhood Research Institute on Service Utilization (ECRI:SU) is committed to such strategies, and these methods and results will constitute the forms of subsequent manuscripts. To the extent that this study can disentangle the complex relationships among variables noted above, then to this degree the Institute should offer a valuable lens through which the future course and evolution of early intervention may be better understood.

Child development science has provided persuasive validation that the growth trajectory of a newborn is indeed highly malleable. Studies have verified that early life experiences and relationships with adults can have positive and indelible influences on a child's health and well being (Werner, 1990). Conversely, exposure to teratogenic factors such as acute psychosocial stress, interaction disturbances, and poverty can significantly compromise cognitive and social/emotional outcomes (Downey and Coyne, 1990; Halpern, 1993; Sameroff et al., 1987; Seifer et al., 1992).

This vast knowledge base has prompted and supported the development of a wide variety of intervention programs for infants and preschool children over the past twenty years (Meisels, Dichtelmiller, and Liaw, 1993). This investment in preventative interventions has, in turn, provided the context for numerous studies that have attempted to identify the outcomes of these programs (Bryant and Ramey, 1987; Dunst, 1986; Shonkoff and Hauser-Cram, 1987; Casto and Mastropieri, 1986). While enormous variability exists in not only the character of these intervention programs, but also in the methods used to examine their effects, two overarching conclusions are apparent from this literature. First, all investigations have verified that the array of outcome indices used in these studies, and their respective psychometric properties, are inadequate to fully answer the query "is it effective?" Second, investigations have also concluded that the level of detail regarding the precise nature of the intervention itself, and the manner and extent to which children and families have engaged with this intervention, is seriously lacking.

While the primary intent of these outcome studies has been to identify and understand benefits, they have also documented the substantial variability that exists not only among programs, but also within programs. In short, despite the fact that policy, funding, location, and personnel can be held constant, the

experiences which different families have in the same program can be remarkably divergent.

In order to more clearly understand the process of service utilization by families with infants and toddlers, the Early Childhood Research Institute on Service Utilization (ECRI:SU) (Harbin and Kochanek, 1992) was formed to conduct a prospective, longitudinal, multi-site study of approximately 300 families residing in three different states (i.e., Colorado, North Carolina, and Pennsylvania). The principal objective of this epidemiologic study is to accurately portray service utilization patterns over time in diverse settings, and more importantly, to identify those factors and processes that significantly affect access, ongoing utilization, and expressed satisfaction by families. While descriptive information regarding this systems based study is available elsewhere (Kochanek and Buka, 1995; Harbin and Kochanek, 1994), the purposes of this paper are: (1) to present preliminary findings regarding service utilization patterns observed thus far in this study; and (2) to examine these patterns in the context of the characteristics of those who have consumed these services, namely children and families. Focal questions that this manuscript addresses are as follows.

> What reported differences exist in the nature of services (i.e., intensity, location, service type and service provider) provided to infants, toddlers, and their families in three different states?
>
> What influences do child characteristics (e.g., age, need/complexity, and race) and family characteristics (e.g., maternal education, income, and insurance status) exert on service utilization patterns?

Measurement and Documentation of Service Utilization

In acknowledgement of the highly dynamic nature of service use patterns in early intervention programs, a serial, time sampling strategy has been devised to record ongoing service utilization. In brief, service use protocols (Appendix A.)

are completed for one week out of every month for an 18 month duration (i.e., May, 1994 through September, 1995). Designated weeks for data collection vary from month to month, and weeks that include holidays or vacation periods are excluded. In examining the degree to which this data collection strategy accurately reflects services stated within individualized family service plans (IFSPs), current plans were reviewed for 25% of the sample. The frequency of all service encounters were categorized as weekly, bi-weekly, monthly, or other (> 1 month). Excluding services scheduled on an "as needed" basis (e.g., care management/service coordination), this review of IFSPs indicated that 72% of all individual services were scheduled weekly or bi-weekly, and 94% of all group services were scheduled weekly. While a more detailed study is currently being conducted regarding the concordance between IFSPs and all services provided, this preliminary examination of service plans suggests that the serial data collection strategy used in this study should capture the majority of services provided over time. Furthermore, weekly service profiles presented in this paper are derived from four weeks of service provision over a four month time period, and therefore, take into account those service encounters that may have occurred on a bi-weekly basis.

This protocol is designed to record all encounters that occur among service providers and children and families enrolled in this study during this select one week period on a monthly basis. Dimensions included within this protocol include: service type (e.g., assessment, individual therapy session, developmental group), service location (e.g., home, center, child care setting), service provider academic discipline, frequency and duration of service, and reason for cancellation code if applicable. As such, this protocol is intended to capture all scheduled services (i.e., those stated and agreed to in the IFSP) as well as those which are actually provided. It is important to note that all

dimensions of service use have been operationally defined in written manuals, and service providers in study communities have received on-site training and ongoing support in the appropriate use and completion of protocols. Findings in this paper include all service data gathered for the period May - August, 1994 for infants/toddlers enrolled in the study in three collaborating states.

Characteristics of Study Children and Families

While the criteria and process used to select study communities and families is presented elsewhere (Kochanek and Buka, 1995), in short, 157 families with infants/toddlers enrolled in early intervention programs in Colorado, North Carolina, and Pennsylvania constitute the sample for this study. Upon enrollment into this investigation, detailed socio-demographic information for both children and families was gathered. For children, this included date of birth, date and source of referral, date of program entry, primary diagnosis and eligibility category, and level of need/complexity. Need/complexity categorizations (i.e., low, moderate, high) were made on the basis of four dimensions: child developmental status, child health status, family need, and number of agencies/programs (e.g., maternal and child health, mental health, child protective service agency) with which the family was affiliated. These categorizations were determined by primary service providers at the outset of the study. For approximately 30% of the sample, Institute staff who were blind to these ratings conducted in-home interviews with families, and on this basis, also provided need/complexity ratings. Inter-rater agreement was high (i.e., Kappa = .46; $p < .001$) with 66% of the ratings being identical, and 94% within one rating category.

For families, factors included parental dates of birth, level of education, employment status, annual income, race, presence of a disability, and insurance

benefit plan. Descriptive portrayals of these data for the three study states are available in other publications (Kochanek and Buka, 1995).

Weekly Service Profile Results

Data which describe utilization of services for a four month period (i.e., four select weeks over this time frame) are presented in Table 1. Significant findings are as follows.

1. Of the 157 infants/toddlers enrolled in the study, 149 (95%) had some form of a scheduled service for the four specific weeks examined. This group accounted for 1,856 scheduled service encounters over the four week period, or approximately three different encounters per child on a weekly basis.

2. Of the scheduled service encounters, approximately 72% were actually provided. For those services that did not occur, 23% were due to families who were unable or did not elect to use the service offered. The remainder of services not provided (5%) were due to agency/provider cancellation.

3. With respect to intensity of service per week, findings indicate that the amount of scheduled service approximates 1.8 hours, with 1.3 hours of service actually provided. Of noteworthy importance is that despite substantial variability in these alternative study environments, the amount of service provided is remarkably congruent among settings. It is important to note that these findings exclude families who canceled all services (i.e., provided hours = 0). Additional, more thorough analyses are planned in order to better understand the characteristics and circumstances of families who elect to use, or are unable to use very few of the services specified in their IFSPs.

Services Scheduled vs. Provided

Findings in Table 1 clearly reveal disparities between services scheduled and those actually provided. In order to more clearly understand these differences and the factors which affect them, Table 2 presents findings that examine mean differences (i.e., scheduled minus provided hours) for select child

Table 1

Infant/Toddler Weekly Services* Provided/Cancelled by State

	CO	NC	PA	Total
No. of children in sample	42	52	63	157
No. of children with services scheduled	40	51	58	149(95%)
No. of service encounters provided/ cancelled**				
service provided	199	787	346	1332(72%)
no show	67	37	63	167(9%)
prov./agency can.	8	40	53	101(5%)
family can.	38	140	78	256(14%)
total	312	1004	540	1856
Mean hours of service per week				
scheduled				
mean	3.0	6.6	2.5	4.3
median	2.1	1.4	1.5	1.8
provided				
mean	2.1	5.3	1.5	3.3
median	1.3	1.4	1.3	1.3

* For 5/94-8/94; one week per month.
** Number of service encounters for 5/94-8/94.

Table 2

Services Scheduled vs. Provided by Child and Maternal Characteristics

Variables Examined	F Value	Sig.
State	.55	ns
Child age	3.57	p<.03
Child and family need/complexity	1.59	ns
Child race	.42	ns
Maternal education	1.32	ns
Family income	1.27	ns
Maternal insurance	1.56	ns

and maternal characteristics. It is important to note that for the 149 infants with scheduled services, 51 (34%) received precisely what was scheduled (i.e., scheduled = provided) , 70 (47%) did not receive a modest amount of scheduled service (i.e., provided < scheduled by one hour or less), and the remainder of the sample (19%) did not receive a significant amount of scheduled service (i.e., provided < scheduled by more than one hour).

When differences between scheduled vs. provided services (i.e., in hours) are examined, statistical analyses reveal that such observed disparities do not appear to be affected by state, child and family need/complexity, and race, as well as maternal education, income, and insurance status. Significant differences are evident among child age groups with toddlers much less likely to receive scheduled services than infants. However, given the fact that toddlers are more likely to receive group based services of longer duration, a service encounter not provided to a toddler is of greater consequence (i.e., relative to service intensity) than to an infant. These data suggest, however, that while toddlers are less likely to receive all scheduled service hours in comparison to infants, child age does not influence the likelihood of scheduled service encounters not being provided.

Service Intensity by Child and Maternal Characteristics

Data which examine service intensity (i.e., total hours of service received per week) by select child and maternal characteristics are presented in Table 3. For child traits (i.e., age, need/complexity, and race), although statistically significant mean differences are not evident, two important observations are noteworthy. First, the standard deviation values that correspond to each calculated mean are quite large. This finding confirms that indeed substantial variability exists in services received, even within common groups such as age

Table 3

Infant/Toddler Weekly Service Intensity by Child and Maternal Characteristics

		Mean Weekly Hours	SD	F Value	Sig.
Child	B-1	2.1	4.9	1.90	ns
Age	1-2	2.2	4.5		
	2-3	4.0	6.5		
Child and Family	Low	2.8	6.4	.04	ns
Need/Complexity	Moderate	3.0	5.4		
	High	2.7	4.3		
Child	White	2.9	5.2	.02	ns
Race	Non-White	2.8	6.2		
Maternal	≤ HS	2.3	5.2	2.42	ns
Education	Some College	5.1	8.6		
	≥ BA	3.2	3.6		
Family	Poverty	1.8	3.8	1.69	ns
Income	Near poverty	3.3	7.0		
	Other	4.2	6.7		
Maternal	Insured	3.8	6.2	.56	ns
Insurance	Medicaid	2.8	6.6		
Status	Not Insured	2.1	2.7		

cohorts. While this finding is comprehensible from a clinical perspective, this large variance also accounts for the resulting F values not attaining statistical significance.

Second, examination of actual mean differences in services used discloses several important findings. First, with regard to child age, toddlers (i.e., 2-3 years) receive approximately twice as much service as do infants (i.e., birth to one year). Second, child and family level of need/complexity does not appear to be of statistical or clinical significance in determining intensity of services received. This is an unanticipated finding, particularly in light of the fact that need/complexity group membership was determined on the basis of four dimensions: child developmental status, child health status, family need, and number of agencies and programs with which the child and family were affiliated (e.g., early intervention, maternal and child health, infant mental health, child protective services). Finally, service utilization does not appear to be influenced by child race.

With respect to maternal characteristics, again, standard deviations for each calculated mean value were large, and thus, resulting F values were statistically insignificant. Of practical and clinical importance however, is the fact that families who have received more service include those in which mothers are more highly educated, report higher annual incomes, and have some form of public or private health insurance. Furthermore, differences in the amount of services received are not trivial (i.e., poverty vs. moderate income; private health insurance vs. no insurance), and imply that these status variables appear to exert considerable influence on service utilization patterns. Subsequent data analyses intend to probe beyond these status variables in order to better understand the underlying processes and mechanisms that relate to these important differences.

While the mean values related to service intensity presented in Tables 1 and 3 are certainly meaningful, it is also important to acknowledge that these mean values are spuriously high as a result of a small number of children in each state having received very intensive services (i.e., 5% of the sample receiving greater than 11 hours of service per week). As such, in order to construct an alternative view of service intensity data, children/families were assigned to one of three utilization groups consistent with the following criteria.

Low Utilization = $\leq$ 1.0 hrs./week (50% of sample)

Moderate Utilization = 1.1 - 2.2 hrs./week (25% of sample)

High Utilization = > 2.2 hrs/week (25% of sample)

Findings that examine service intensity for the above groups on the basis of select child and family characteristics are presented in Table 4. Overall, findings are confirmatory and consistent with the observations noted previously in that : (1) toddlers receive significantly more service than do infants; (2) children and families of low need/complexity receive slightly less service than do infants and families of moderate or high need; and (3) families residing in poverty, those without health insurance, and those in which mothers have attained a high school degree or less are all more likely to receive less frequent service.

Service Typology by Child and Maternal Characteristics

Data which examine the location, type and provider of service within study states are presented in Table 5. Important findings are as follows.

1. Educators and paraprofessionals account for 62% of the service encounters provided. The number of service units provided by motor and speech/language therapists as well as ancillary personnel, nurses, psychologists, social workers, sensory impairment specialists) are nearly equal (i.e., 13% of total encounters for each group.)

Table 4

The Influence of Child and Maternal Characteristics on Service Intensity*

Variables Examined	Chi Square	Sig.
Child age	19.28	p<.001
Child and family need/complexity	9.58	p<.05
Child race	3.51	ns
Maternal education	5.49	ns
Family income	6.75	ns
Maternal insurance	3.32	ns

* Low = ≤ 1.0 hrs./week.
Moderate = 1.1 - 2.2 hrs./week
High = > 2.2 hrs./week

Table 5

Infant/Toddler Weekly Service Profile* by State

	CO	NC	PA	Total
Service Provider				
ancillary	24	85	73	182(14%)
educator	54	248	199	501(38%)
motor	70	75	36	181(14%)
paraprof.	-	316	9	325(24%)
speech/lang.	54	63	29	146(11%)
total	202	787	346	1335
Location				
home	41	104	111	256(19%)
center	73	557	167	797(60%)
child care site	8	87	6	101(8%)
other	78	39	62	179(13%)
total	200	787	346	1333
Service Type				
assess./planning	69	147	95	311(23%)
ind. therapy	53	202	139	394(30%)
center group	77	213	79	369(28%)
integrated group	-	225	33	258(19%)
total	199	787	346	1332

* For 5/94-8/94; one week per month.

2. With regard to location of service provision, the majority of encounters occurred in center based environments (60%). It is important to note however, that 8% occurred in child care settings, and 13% in other miscellaneous community based environments. (e.g., churches, community centers, food pantries, shelters, and health centers).

3. When the 18 discrete service types that appear on the protocol are clustered into common groupings, findings indicate that of all service encounters provided, 30% involved individual contact with children and/or families, 28% were group services, and 23% were devoted to assessment/planning functions. Of noteworthy significance is the finding that approximately one-fifth of all services occurred in an integrated group setting (e.g., child care site, parent/child center, Head Start program), and furthermore, substantial differences among study states are evident in this area. Additional data are currently being gathered in order to more fully understand the underlying reasons for these observed differences.

Categorical data were used to examine the influence of select child and maternal characteristics on service typology. For children, age (i.e., B-1, 1-2, 2-3), need/complexity (low, moderate, high), and race (white, non-white) were examined in relation to the three dimensions presented in Table 5 (i.e., location, type, and provider of service). All analyses reveal highly significant findings and are presented in Tables 6 and 7 respectively. It is important to note that the statistical power for analyses in Table 6 (i.e., event focused) is significantly greater than Table 4 (i.e., child focused) due primarily to the N entered into each analysis (i.e., 1200 events vs. 150 children). As such, findings in Table 6 yield more highly significant results.

Child Age

Findings reveal substantial differences in location, type, and provider of service relative to child age. More precisely, infants are primarily served in their homes (27%) and center based programs (55%), while toddlers receive the majority of their services in centers (67%) and in other community based settings (23%).

Table 6

The Influence of Child Characteristics on Location, Type, and Provider of Service

	Variables Examined	Chi Square Value	Sig.
	Location	79.58	p<.0001
Child Age	Type	52.72	p<.0001
	Provider	40.59	p<.0001
Child and Family Need/ Complexity	Location	57.47	p<.0001
	Type	80.85	p<.0001
	Provider	26.33	p<.001
Child Race	Location	98.41	p<.0001
	Type	16.22	p<.001
	Provider	5.53	ns

Table 7

Distribution of Service Encounters by Location, Type, and Provider by Child Characterstics

	Age		*Child and Family Need/Complexity*		*Race*	
	B-1	**2-3**	**Low**	**High**	**W**	**Non-W**
Location						
home	27%	10%	15%	29%	18%	23%
center	55%	67%	56%	55%	63%	50%
child care site	6%	11%	13%	4%	4%	19%
other	13%	12%	16%	12%	15%	8%
Type						
assess./planning	25%	20%	29%	26%	25%	20%
ind. therapy	36%	24%	24%	42%	27%	37%
center group	21%	30%	27%	12%	28%	27%
integrated group	19%	26%	20%	20%	21%	15%
Provider						
ancillary	17%	11%	16%	15%	13%	14%
educator	41%	40%	38%	39%	36%	42%
motor	10%	12%	10%	19%	14%	11%
paraprofessional	28%	23%	23%	19%	25%	23%
speech/language	3%	14%	13%	9%	11%	10%

With respect to service type, infants primarily receive assessment/planning (25%) and individual therapy services (36%), while toddlers are more likely to receive group services (56%). Finally, with regard to type of service provider, infants receive the majority of their services from educators, paraprofessionals, and ancillary staff (e.g., nurses), while toddlers are most likely to encounter educators, paraprofessionals, and speech/language therapists (77%).

Child and Family Need/Complexity

Child and family level of need/complexity also exerts significant influence over service typology. With regard to location, while low need/complexity children and families are most likely to be served in center and community based programs (85%), high complexity children and families are served in their homes (29%) and center programs (55%).

For type of service provided, low need/complexity children and families are most likely to receive assessment/planning (29%), center group (27%), and individual therapy services (24%), while highly complex children and families receive individual therapy (42%) and assessment/planning services (26%).

Analyses also reveal that low need/complexity children and families are most likely to be served by educators, paraprofessionals, and ancillary staff (77%), while high need/complexity children and families encounter educators, motor therapists, and paraprofessionals (77%).

Child Race

Service typology also appears to be significantly associated with child race. More specifically, white children receive the majority of services in their homes or center based programs (81%), while minority children are more likely to be served in their homes and in child care sites. Consistent with the above findings, minority children are more likely to receive individual services (i.e., home

visits and consultation within child care settings), while white children receive more assessment/ planning and integrated group services.

Finally, with regard to the influence of child race and type of service provider, data reveal that white children are served most often by educators, paraprofessionals, and motor and speech therapists, while minority children are most likely to encounter educators and paraprofessionals.

Findings which examine the influence of select maternal characteristics on location, type, and provider of service are presented in Tables 8 and 9. It is important to note that categorical variables were defined as follows: maternal education (≤ HS, some college, BA), family income (poverty, near poverty, moderate), and maternal health insurance status (private, Medicaid, uninsured). In Table 9, data are presented for the two most dissimilar groups only (i.e., HS vs. BA; poverty vs. moderate; and privately insured vs. uninsured).

Maternal Education

Statistical analyses reveal significant differences in service typology on the basis of maternal education. More precisely, mothers with a high school education or less are most likely to be served in their homes or in center based programs (80%), while children of college educated mothers receive substantially more service in integrated, community based settings (i.e., 42% vs 20%).

With respect to type of service received, mothers with a high school education are more likely to receive assessment/planning and individual services, while mothers with college degrees are more likely to receive center based group services. Finally, the children of mothers who report higher degrees of educational attainment are also much more likely to receive motor and speech/language therapy services (i.e., 37% vs. 22%).

Table 8

The Influence of Maternal Characteristics on Location, Type, and Provider of Service

	Variables Examined	Chi Square Value	Sig.
	Location	158.21	p<.0001
Maternal	Type	66.31	p<.0001
Education	Provider	168.47	p<.0001
	Location	61.58	p<.0001
Family	Type	75.10	p<.0001
Income	Provider	82.92	p<.0001
Maternal	Location	85.14	p<.0001
Insurance	Type	80.84	p<.0001
Status	Provider	106.47	p<.0001

Table 9

Distribution of Service Encounters by Location, Type and Provider by Maternal Characteristics

	Education		*Income*		*Insurance*	
	≤HS	≥BA	Poverty	Mod.	Ins.	Not Ins.
Location						
home	24%	16%	26%	13%	13%	33%
center	56%	42%	48%	70%	68%	25%
child care site	9%	18%	16%	6%	7%	13%
other	11%	24%	11%	11%	11%	29%
Type						
assess./planning	27%	23%	27%	18%	20%	29%
ind. therapy	32%	30%	43%	21%	21%	45%
center group	27%	35%	19%	34%	36%	21%
integrated group	14%	13%	12%	26%	23%	6%
Provider						
ancillary	18%	10%	21%	7%	10%	6%
educator	41%	45%	42%	35%	32%	55%
motor	11%	19%	14%	15%	14%	25%
paraprofessional	18%	8%	11%	34%	34%	-
speech/language	11%	18%	12%	10%	11%	13%

Family Income

Findings reveal that service typology also significantly varies by family income. For example, data indicate that families in poverty are much more likely to be served in their homes (26% vs. 13%), while moderate income families receive a greater proportion of their services in center based environments (i.e., 70% vs. 48%). Second, families residing in poverty are more likely to receive assessment/planning and individual services, while families with a moderate income are more likely to receive group services that are center based or occur in a community based setting (60% vs. 31%).

Finally, families residing in poverty are more likely to be served by educators and ancillary staff (e.g., social worker), while moderate income families are most likely to encounter educators and paraprofessionals.

Maternal Insurance Status

Health insurance coverage also appears to exert significant influence over service typology. More precisely, mothers who report that they are uninsured are more likely to receive services in their home. Conversely, women with private health insurance are much more likely to have their children served in center based group programs (i.e., 68% vs. 25%).

With respect to service type, children of uninsured mothers are more likely to receive assessment/planning and individual services, while mothers with private insurance receive substantially more service in group settings (i.e., both center and community based). Finally, uninsured mothers are more likely to be served by educators (i.e., 55% vs. 32%), while privately insured women are most likely to receive services from educators and paraprofessionals.

The purpose of this paper is to present preliminary findings with regard to the influence of child and family socio-demographic variables on service utilization patterns. When service data are examined for one week per month over a four month duration, significant findings are as follows.

1. Of the total number of encounters scheduled for infants, toddlers, and their families, 72% were actually provided. For those that did not occur, the majority (i.e., nearly one-fourth) were due to families who were unable or did not elect to use the service offered.

2. With respect to intensity of services received per week, while the median amount of scheduled service approximates 1.8 hours, data indicate that 1.3 hours of service were actually provided. Furthermore, results indicate that approximately one-third of the sample received all of its scheduled services, and nearly one-half of the group received only one hour or less of its scheduled service. In short, for those families who elect to use services, data indicate that the fidelity between services scheduled and provided is quite high.

3. With regard to service intensity (i.e., hours per week), despite statistically insignificant findings, data reveal that child age, family income, maternal education, and maternal insurance status appear to account for important differences in service use. In brief, children/families more likely to receive a higher volume of service include toddlers, and families in which mothers are insured, more highly educated, and report higher annual incomes. Given the fact that children and families in this study are reflective of the total population served within the nine study environments (Kochanek and Buka, 1995), these results appear to be generalizable to this larger group of families.

   These findings are also congruent with studies that have examined utilization of health care services by children and families. For example, in a study examining access to pediatric services, Wood et al. (1990) reported that poor and uninsured children less frequently had a regular source of health care, and more frequently used emergency rooms, community clinics, and hospital outpatient departments as their regular provider. Low income children had much less access to care when compared to children from more affluent families, independent of status or health status. Similarly, Colle and Grossman (1978) reported that for a sample of preschool children, family income and mothers schooling were highly significant determinants of pediatric care utilization.

Overall, while static, socio-demographic factors appear to exert influence on service use patterns, such factors do not disclose the underlying mechanisms and decision making processes that different families employ to access services, nor do these factors provide meaningful insights into the variability that exists within groups (e.g., uninsured families and those residing in poverty). Considerable data are being collected in this study that should assist in illuminating these differences, and these analyses will constitute the focus of subsequent publications by the Institute.

4. Findings reveal that child and maternal characteristics also appear to exert significant influence over service typology (i.e., location, type, and provider of service). For children, infants are primarily served in their homes and center based programs, while toddlers receive the majority of their services in centers or in other community based settings. With regard to need/complexity, more complex children and families are likely to be served in their homes or in centers. For families, mothers who report higher levels of educational attainment and annual income are more likely to have children who are served in integrated, community based settings, and also received a higher proportion of therapeutic services (i.e., motor and speech/language therapy).

Overall, preliminary findings presented in this paper verify that early intervention is not a homogenous experience for children and families served, both within and across programs. Furthermore, while data suggest that the attributes of those who consume the service, namely children and parents, influence service intensity and typology, important questions remain to be answered.

First, while it is acknowledged that service use patterns are highly influenced by the characteristics of children and families served, it is also critical to recognize that service availability, service access, and ongoing utilization are complex processes that are affected by a myriad of factors (e.g., funding, policy, environmental context, interagency affiliations). These factors comprise the systems based conceptual framework (Kochanek and Buka, 1995) that undergird

systems based conceptual framework (Kochanek and Buka, 1995) that undergird this study, and as such, subsequent analyses will examine the influence of these factors and systems on service use as well.

Second, preliminary findings in this paper underscore the enormous importance of child and family systems as explanatory factors in examining service use patterns. Beyond the demographic variables presented herein, however, a broad array of important dimensions also differentiate families such as values and beliefs related to family centered care principles, psychological well being, the nature and extent of available social supports, and parents perceived and expressed satisfaction with services received. These dimensions are significant in that they illuminate important differences among families within common groups (e.g., uninsured), and furthermore, allow for a clearer understanding of those subtle and underlying factors that account for the observed variability in service use patterns. These dimensions of family systems will also constitute the focus of subsequent analyses and publications by the Institute.

Finally, the vast knowledge base in early intervention research is a persistent reminder that the pursuit of "main effects" from single factors or variables is relatively fruitless. As such, the most promising lines of inquiry are those which accommodate both quantitative and qualitative data, and which employ multivariate analytic strategies that can integrate multiple forms and sources of information. The Early Childhood Research Institute on Service Utilization is committed to such strategies, and these methods and results will constitute the forms of subsequent manuscripts. To the extent that this study can disentangle the complex relationships among variables noted above, then to this degree the Institute should offer a valuable lens through which the future course and evolution of early intervention may be better understood.

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Appendix A

Service Utilization Protocol

E.C.R.I. Early Childhood Research Institute

Infant / Toddler Weekly Service Summary

County _____ State _____ Service Provider Code _____

Service Provider Name _____ (Last / First / MI)

Week Ending Date (Saturday) _____ (Mo. Day Year)

	Child's Name	Service Date	Service Type	Service Location	Length of Contact * (Round to nearest 1/2 hr)	Cancellation Code
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						

Provider Codes

1. Adaptive PE
2. Audiologist
3. Educator
4. Nurse
5. OT
6. PT
7. Physician
8. Psychologist
9. Social Worker
10. Special Educator
11. Speech/Language Therapist
12. Vision Impairment Specialist
13. Hearing Impairment Specialist
14. Paraprofessional/Aide
15. Interpreter
16. Child Care/Head Start Teacher
99. Other_____

Service Location

1. Home
2. Center
3. Family Day Care
4. Day Care Center
9. Other_____

Cancellation Code

1. No Show
2. Provider/Agency Cancellation
3. Client Cancellation

Service Unit Type

Individual

1. Screening (Intake)
2. Assessment
3. Semi-Annual Progress Review
4. IFSP Meeting
5. Developmental Monitoring
6. Service Coordin/Management
7. Child Therapy
8. Family/Child Therapy
9. Family Counseling
10. Transition Planning
11. Consultation to Day Care
12. Consultation to Other Agency
19. Other Individual Service

Group

20. Integrated Group Placement
21. Center Development Group
22. Parent/Child Group
23. Parent Education/Support Group
29. Other Group Service

** Please place an asterisk next to services that are provided by more than one person at the same time, or that are provided in the context of a group activity.*

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